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NOTES ON GEOGRAPHIC DISTRIBUTION

Amphibia, Anura, Leiuperidae, *Pleurodema thaul*: Latitudinal and altitudinal distribution extension in Chile.

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The vast latitudinal extension of the Chilean territory determinates a climatic gradient which affects the distribution and diversity of its flora and fauna. From north to south, an increase of precipitation levels produces a gradual change from a desert climate (the Atacama Desert) to a temperate environment with oceanic influence in the austral extreme. Within this climatic gradient, the largest number of amphibian species, 66 % out of 56, is concentrated in central and southern Chile, between 38° and 46° S (Veloso and Navarro 1988; Ortiz and Diaz-Páez 2006). At the north of Chile, the majority of species is found in the Altiplanic zone (northeast limit of the country, 17° to 22° S) and belongs to genus *Telmatobius* (Formas et al. 2005). The situation is different in the coastal and interior zones of Northern Chile, where only two species have been recorded 29° S northward: *Bufo atacamensis* and *Pleurodema thaul*. Here, the Atacama Desert constitutes a natural barrier for the distribution of amphibians. On the other hand, the Andes Mountains also constitute an effective barrier for amphibian colonization on the east side of Chile.

The genus *Pleurodema* comprises 12 species (Frost 2007), and has a wide distribution in South America from Panamá (Central America, 13° N) until the Estrecho de Magallanes (53° S) (Duellman and Veloso 1977). In Chile, three species of this genus are present, having *P. thaul* the largest distribution. Latitudinally, the distribution of this species has been delimited between the city of Copiapó (27°20' S) and the Aysén region, approximately at 46° S (Cei 1962; Figure 1). In Argentina, its distribution is marginal, including the west borders of Neuquén, Río Negro, and Chubut provinces (between 37° and 46° S; Figure 1). Duellman and Veloso (1977) suggested that the species distribution is not continuous northern than the city of La Serena (30° S). Additionally, the altitudinal limits were established from sea level up to 2,000 m above sea level (Veloso and Navarro 1988).

In this work, we report two new localities which extend the altitudinal and latitudinal distribution of *P. thaul* in Chile. On January 16th 2007, we collected adults, subadults and larvae of this species (Figure 2) at the Carrera Pinto locality, Atacama Region (27°06'40.2" S, 69°53'44.3" W, 1,565 m; Figure 3). The new locality is distant 55 km northeast of the city of Copiapó. The specimens were deposited at the Herpetological Collection of Departamento de Biología Celular y Genética of the Universidad de Chile (DBGUCH 0701067-0701076: 10 adults and subadults; DBGUCH 0701064-0701066: three larvae). Carrera Pinto is an oasis located in the middle of the Atacama Desert in an area strongly affected by mining activities. A literature review indicates that the only populations described north from La Serena are Pajonales, Vallenar (Huasco river), and Copiapó (Cei 1962; Duellman and Veloso 1977; Figure 1). Currently, the Copiapó river bed is totally dry and the remaining water is canalized

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for irrigation purposes. Recent surveys (2005-2007) in Copiapó and Vallenar areas have been unsuccessful in finding *P. thaul* or *B. atacamensis*, species which were abundant in the past (Cei 1962). These observations confirm the isolation of Carrera Pinto population and its importance to define the actual northern distribution limit of *P. thaul*.

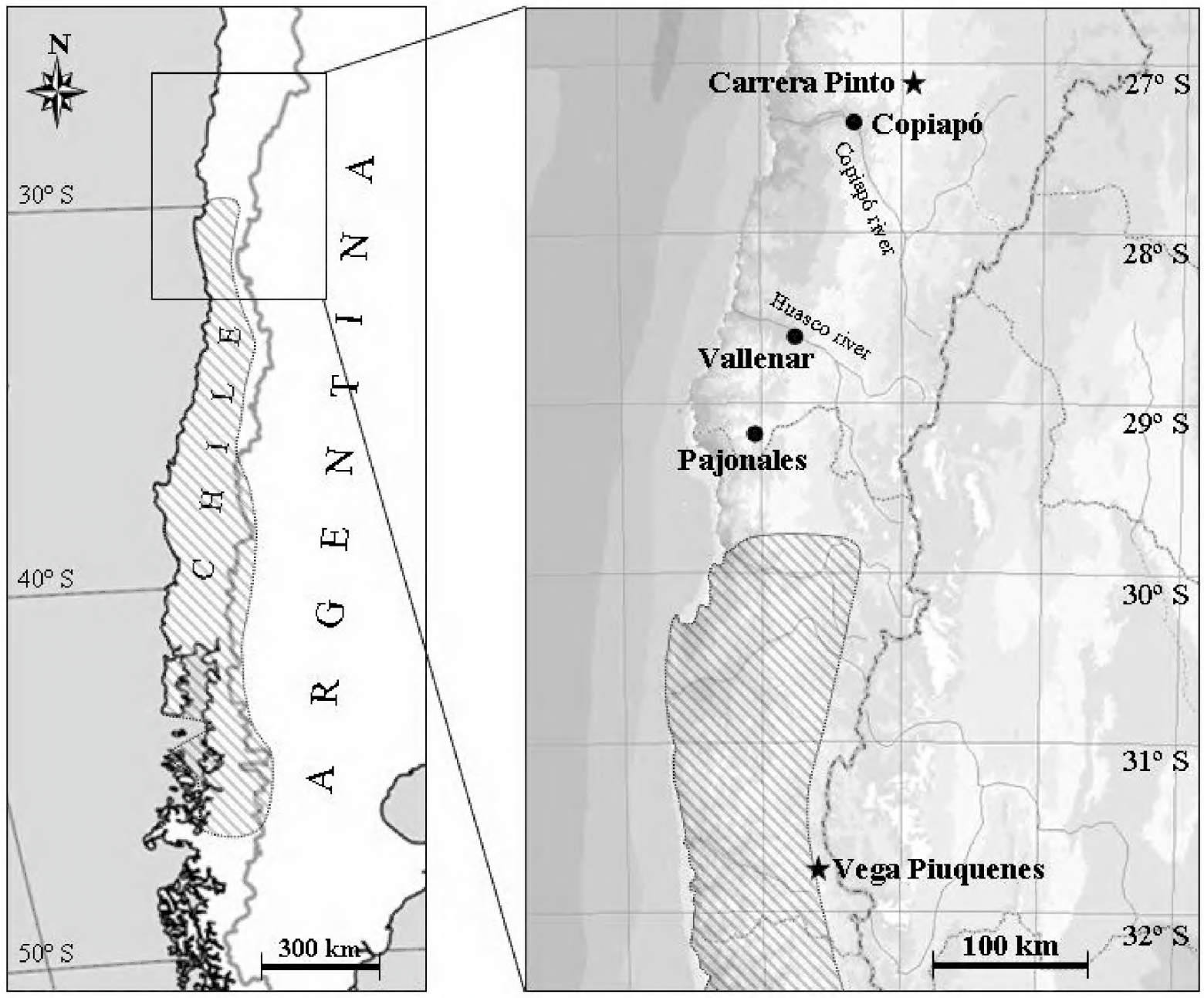

Figure 1. Distribution map of *Pleurodema thaul*. The diagonal lined surface corresponds to the continuous distribution range according to Duellman and Veloso (1977). The right figure shows all the described localities north of 30° S (Copiapo, Vallenar, and Pajonales), plus the two new localities of this report, Carrera Pinto and Vega Piuquenes, indicated by stars. The distribution was drawn based on Cei (1962; 1980), Duellman and Veloso (1977), and IUCN (2006).

Conversely, Vega Piuquenes (31°45'06.4" S, 70°35'22.9" W, 2,727 m; Figure 4), extends the altitudinal limit of the species over 2,000 m. Here, we collected a juvenile specimen on March 24th 2007 (DBGUCH 0703009). Most of the Chilean amphibians inhabit below 2,000 m, decreasing in richness between 2,000 and 3,000 m (Veloso and Navarro 1988). Above 2,000 m, it is possible to find only species restricted to the altiplanic environment on the extreme northeast of Chile, such as *Bufo spinulosus*, *Pleurodema marmorata* and many species of *Telmatobius* (Formas et al. 2005). Nevertheless, only *Alsodes montanus*, *A. tumultuosus* and *B. spinulosus* are described above this altitude in central Chile. Therefore, the discovery of *P. thaul* in Vega Piuquenes confirms it as a species with generalist habits and wide range of distribution (Díaz-Páez and Ortiz 2003), which can be found in any kind of environment, from Atacama Desert oasis (Carrera Pinto) and Andean slopes in central Chile to the austral temperate forests of Aysén.

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Figure 2. Subadult specimens of *Pleurodema thaul* from the locality of Carrera Pinto.

Figure 3. Sampling site in Carrera Pinto oasis, showing the exact place where water springs up. Two authors, C. L. Correa (walking) and E. R. Soto, appears in this photography.

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Figure 4. Panoramic view of the locality of Vega Piuquenes.

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